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Air Docket
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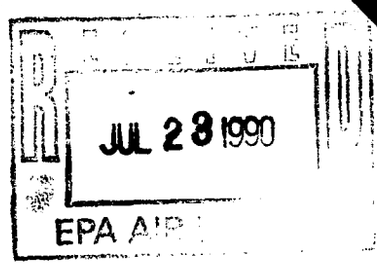

Dear Sir

I am aware that on June 22nd this year the Environmental Protection Agency held a hearing on Ethyl Corporation's fuel waiver application. In particular, Ethyl Corporation wished to use Hitec 3000, otherwise known as methylcyclopentadienyl manganese tricarbonyl (MMT) in unleaded petrol.

I am also aware that submissions were made at the hearing regarding the health effects of manganese.

My position is that of Director of Occupational and Environmental Health and Safety for The Broken Hill Pty. Co. of Australia and in addition I am Chairman of the Occupational Health and Environment Committee of the International Manganese Institute, which has its office in Paris. The Committee is currently producing guidelines on environmental monitoring for manganese materials, developing a code of practice for people working with manganese substances and maintaining a register of proven cases of manganese toxicity. In addition, the Committee is monitoring epidemiological research related to manganese exposure.

The Broken Hill Pty. Co. has also recently completed data collection in a study of low level manganese exposure in its mining operation at Groote Eylandt, Northern Territory of Australia. This included a neuropsychological assessment, personal dust monitoring and haematological and biochemical assessment on 300 employees as well as a control group of 150 from another non-manganese mine. The initial report of the statistical analysis should be available by mid August 1990.

c.c. Mary T. Smith
Director, Field Operations and Support Division (EN-397F)
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The low level occupational exposure is nevertheless very much greater than community exposure from the degradation products of MMT in the worst case scenario.

Reference has been made to the considerable "violence" amongst the aboriginal inhabitants of Groote Eylandt. What is established is that there is a high imprisonment rate amongst the aboriginal population but this owes more to the prevalence of minor crime, most often related to alcohol consumption and also petrol sniffing. This has accompanied a breakdown in tribal authority which unfortunately has occurred since the development of part of the island as a manganese mine. Nearly all the crimes are against the property of GEMCO, the mining body, or its employees and nearly all is alcohol related.

Unfortunately aboriginal communities have not handled alcohol well where this has been introduced from the white communities. Experienced counsellors who have lived in a number of aboriginal communities feel that the level of violence is no greater than in other non-manganese exposed communities. The high imprisonment rate is partly due to the ease of detection and the clean-up rate by the resident police force for minor crime.

The neurological condition referred to amongst the aboriginal population on Groote Eylandt is most likely an hereditary spinocerebellar degeneration. This is the opinion of neurologists who have seen the small number of cases. The presentation is not that which one would expect from manganese intoxication and there has not been recorded a Parkinsonian type syndrome.

In any discussion on manganese, considerable recognition should be made of the fact that manganese is an essential trace element for humans, unlike lead, to which comparisons are often made. Cereals, nuts and tea are known to have high levels of manganese and the body's homeostatic mechanisms reject and excrete excess manganese and other essential elements presented to it. Where pathological conditions exist such as anaemia, alimentary uptake is facilitated.

In the internal combustion engine organic MMT is converted into inorganic oxides of manganese, in particular Mn_3O_4. Concern has been expressed on the public health effects of increased atmospheric Mn_3O_4. Reference has also been made relating to an increase in violence amongst susceptible individuals in the community.

The reference to Manganese in Hair of Criminals detained in pentitenlaries is unpublished work and needs very carefull assessment before attempting to identify any association between manganese and criminal behaviour and there is a no suggestion of a cause and effect relationship. If this hypothesis were true it would suggest that a small proportion of the public exposed to normal background manganese have a higher body burden, possibly related to an hereditary difference at the biochemical level in the way the body handles this metal. The small addition to this background manganese from MMT which is still only a small proportion of the daily requirement would not be expected to have any effect.

Information available so far is really too limited to enable worthwhile discussion.

From the EPA's own document of 1984 it has been stated that no cases of manganism have been recorded where the occupational exposure to dusts is less than 5mg/m^3, time weighted average.. This is the current US standard. There is an individual susceptibility to manganese but nevertheless where cases of chronic manganism have occured in industry, it has resulted in these people from exposures of many orders of magnitude to this standard.

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Yours sincerely

DR. R.W. HART
Director